AMENDMENT D
(37 C.F.R. 1.111)

IN THE SPECIFICATION:

Please amend the specification in accordance with 37 C.F.R. 1.121.

Other than the correction of the spelling of the word "cubic" on page 1, the specification are generally amended, where appropriate, to show the use of applicant's trademark for the magnetized characteristics of the various forms of gases and elements such as hydrogen and oxygen. More specifically, the specification has been amended herein in the below listed paragraphs and pages:

On page 1, in the first paragraph starting on line 3 and ending at line 12;

On page 1, in the paragraph starting on line 17 and ending at line 25;

On page 2, in the 6 paragraphs starting at line 8 and ending at line 36;

In the first paragraph on page 3, line 1-13;

On page 4, in the paragraph starting at line 11 and ending at line 20;

On page 5, in the first two paragraphs starting on line 1 and ending on line 14;

On page 6, in the first paragraph starting on line 1 and ending on line 9;

On page 6, in the paragraph starting online 33 and ending on line 35;

On page 7, in the three consecutive paragraphs starting at line 8 and ending at line 24;

On page 8, in the paragraph starting at line 22 and ending at line 27;

In the paragraph starting on page 8, line 35 and ending on page 9, line 9;

In the consecutive paragraphs starting on page 9, line 19 and ending on page 10, line 24;

On page 12, in the paragraph starting at line 23 and ending at line 35;

On page 13, in the paragraph starting on line 14 and ending on line 19;

On page 15, in the paragraph starting on line 21 and ending on line 29;

On page 16, in the paragraph starting on line 13 and ending on line 19;

In the paragraph starting on page 17, line 29 and ending on page 18 at line 12;

In the consecutive paragraphs starting on page 18, line 28 and ending on page 19, line 10;

On page 19, in the consecutive paragraphs starting at line 18 and ending at line 32;

On page 21, in the consecutive paragraphs starting at line 1 and ending at line 19;

In the five consecutive paragraphs starting on page 21, line 29 and ending on page 23, line 29; and

In the four consecutive paragraphs starting on page 24, line 1 and ending on page 25 at line 13.

The affected amended paragraphs are attached herein on separate sheets.

<u>AMENDMENT TO SPECIFICATION</u>

[Deleted material is struck-through and added material is underlined]

On page 1, in the first paragraph starting on line 3 and ending at line 12:

Hydrogen is emerging as one of the primary alternative fuels for the large scale replacement of gasoline and other fossil fuels via its use as automotive fuel or in fuel cells. However, hydrogen is a fuel with one of the lowest specific density and energy content among all available fuels. In fact, **the** hydrogen **molecule** has **a weight** ~~the specific density~~ of about two atomic mass unit (2 a.m.u.) and the energy content in British Thermal Units (BTU) per standard cubic foot (scf) of about 300 BTU/scf. By comparison, gaseous hydrocarbons can have specific densities and energy content up to eight times these values, as in the case of acetylene.

On page 1, in the paragraph starting on line 17 and ending at line 25:

1) The low specific density prevents the automotive use of hydrogen in a compressed form because of insufficient range, or excessively large storage requirements. For instance, gasoline contains about 115,000 BTU per American gallon (g). As a result, the gasoline gallon equivalent of hydrogen is given by 115,000 BTU/300 BTU = 383 scf. Therefore, the equivalent of a 20 g gasoline tank would require 7,666 standard **cubic** ~~cubiu\ie~~ feet (scf) of hydrogen which is a prohibitive number of scf for storage in an ordinary car.

On page 2, in the 6 paragraphs starting at line 8 and ending at line 36:

This invention resolves the above problems for the use of hydrogen as a fuel by achieving a new form of hydrogen, called for reasons explained below ~~"MagneHydrogen" (or "MagH"~~ **MagH^{TM} hydrogen fuel** ~~for short)~~ which possesses specific density and energy output bigger than those of conventional hydrogen.

This invention also implies the production of a new form of oxygen, called ~~"MagneOxygen" (or "MagO"~~ **MagO^{TM} oxygen** ~~for short)~~ which also possesses specific density and energy content much bigger than those of the conventional oxygen.

Therefore, the combustion of MagH^{TM} **hydrogen fuel** with MagO^{TM} **oxygen**, whether for automotive use or for a fuel cell, implies a further dramatic reduction of storage tanks, an increase of the energy output, and a consequential reduction of costs.

A scientific notion of paramount importance for this invention is the new chemical species of ~~"electromagnecule"~~ **magnecular clusters** discovered by this inventor.

~~Electromagnecules~~ **These magnecular clusters** are stable clusters generally composed of individual atoms, parts of conventional molecules called dimers (or also radicals) and ordinary molecules under a new internal bond originating in the electric and magnetic polarizations of the orbits of at least some peripheral atomic electrons. ~~Due to the~~ **There is a** dominance of magnetic over electric polarizations~~, electromagnecules are often called "magnecules."~~ **.**

~~The new forms of hydrogen and oxygen of this invention have been called MagneHydrogen and MagneOxygen, or MagH and MagO, respectively, to denote that their chemical composition is not that of the conventional molecules H_2 and O_2, but rather that of the new chemical species of magnecules identified in more details below.~~

In the first paragraph on page 3, line 1-13:

~~**Magnecules**~~ **These magnecular clusters** are generally detected via macroscopic peaks in Gas Chromatographic Mass Spectrometric (GC-MS) equipment, which peaks result to be unknown following computer search among all known molecules, while having no signature under InfraRed Detectors (IRD) at the atomic weight of the MS peak. The latter occurrence establishes that the peak detected in the GC-MS cannot possibly be a molecules, particular for the case of large cluster with a weight of the order of hundreds of a.m.u. After eliminating valence bonds, the only remaining possibility for explaining the internal attractive force holding ~~**electromagnecules**~~ **the magnecular clusters** together is that such forces are of magnetic and electric nature~~**, as studied in detail in the attached monograph**~~.

On page 4, in the paragraph starting at line 11 and ending at line 20:

Said magnetic polarizations are individually unstable, because the conventional distribution of the orbitals in all directions in space is reacquired due to rotations caused by temperature as soon as the external magnetic field is terminated. However, the coupling via opposing magnetic polarities of two or more atoms is instead stable because, when the external magnetic field is removed, rotations due to temperature apply to the bonded atoms as a whole and not to the individual atoms. As a result, ~~**magnecules**~~ **the clusters** are stable at ordinary atmospheric temperatures and pressures.

On page 5, in the first two paragraphs starting on line 1 and ending on line 14:

An important feature of ~~**magnecules**~~ **the magnecular cluster** is that said magnetic polarization occurs in individual atoms rather than in molecules as a whole. This implies that ~~**the**~~ **this** new chemical species ~~**of magnecules**~~ can be formed for all possible gases irrespective of whether they are paramagnetic or diamagnetic.

In fact, the hydrogen molecule H_2 is known to be diamagnetic, namely, clear experimental evidence has established that, when exposed to a magnetic field as strong as desired, the hydrogen molecule does not acquire a total net magnetic polarization North-South. However, by no means this property prevents magnetic polarizations of each individual atom H of the H_2 molecules, which polarizations can then individually bond atom to atom, rather than molecule to molecule, and form in this way **the magnecular clusters** ~~**magnecules**~~.

On page 6, in the first paragraph starting on line 1 and ending on line 9:

It is evident that the new chemical species of **magnecular clusters** ~~magnecules~~ implies an increase of the specific weight of any gas, thus including hydrogen and oxygen. In fact, by denoting the valence bond with the symbol - and the magnetic bond with the symbol x, it is evident that the creation of an essentially pure population of **magnecular clusters** ~~magnecules~~ with the structures (H-H)xH, (H-H)x(H-H), (H-H)x(H-H)xH, etc., have respective specific densities of the order of 3, 4, 5, etc., while the conventional molecular structure H_2 can only have a specific density close to 2, as recalled earlier.

On page 6, in the paragraph starting online 33 and ending on line 35:

A primary objective of this invention is therefore that of achieving the new chemical species of MagH^{TM} **hydrogen fuel** with an average specific density of about 10. a.m.u.

On page 7, in the three consecutive paragraphs starting at line 8 and ending at line 24:

Another primary objective of this invention is, therefore, the creation of MagO<u>TM</u> **<u>oxygen</u>** with an average specific density which is at least a multiple that of O_2, with a corresponding increase of the BTU content.

Another important feature of **<u>magnecular clusters</u>** ~~**magnecules**~~ is that they imply an increase of the energy release in thermochemical reactions generally bigger than the increase due to the increased specific density. This important feature is due to the following three primary aspects:

i) The presence in **<u>magnecular clusters</u>** ~~**magnecules**~~ of individual uncoupled atoms, as established by ample experimental evidence, which atoms combine at the time of the combustion, thus releasing energy. For instance, the presence of isolated H atom in a hydrogen ~~**magnecule**~~ **<u>magnecular cluster</u>** implies the esoenergetic reaction at the time of its combustion $H + H \rightarrow H_2$ which releases 104 Kilo calories (Kcal) per mole. It is evident that this additional energy release is completely absent in a conventional molecular structure.

On page 8, in the paragraph starting at line 22 and ending at line 27:

It is then evident that the combustion of MagH™ **hydrogen** and MagO™ **oxygen** releases more energy than the combustion of conventional H and O gases, particularly when all three of the above features i), ii) and iii) are accomplished. Another important objective of this invention is therefore that of achieving magnetic polarizations sufficiently strong to caused said three features.

In the paragraph starting on page 8, line 35 and ending on page 9, line 9:

It should be indicated that the H_3 structure has already been detected in various GC-MS tests, although the structure is generally believed to be due to some form of valence bond. In depth studies ~~reviewed in details in the attached monograph~~ have established that a triple valence bond would imply the violation of Pauli's exclusion principle (and other physical laws). In fact, the valence interpretation of the H3 bond would imply the bond of a third electron to a pre-existing valence pair, resulting in the existence of at least two electrons with the same quantum numbers in the same energy level, an occurrence which would be a clear violation of Pauli's exclusion principle.

In the consecutive paragraphs starting on page 9, line 19 and ending on page 10, line 24:

Consider now the oxygen in which the O_3 molecule has been detected long ago and called ozone. In this case the O_2 molecule possesses free electrons for possible additional bonds into O_3. Nevertheless, studies have revealed that at least one realization of O_3 has the magnecular structure (O-O)xO with internal coupling similar to those of the **magnecular cluster** ~~**magnecule**~~ H_3 = (H-H)-xH. This is again due to the fact that valence has been historically established solely for the correlation-coupling of two electrons. The addition of a third electron in the valence couplings generally violates Pauli's exclusion principle and other physical laws which prevent the existence of any possible triple valence bond.

It is evident that the experimental detection of H_3 and O_3 provides major credibility for the creation in this invention of H and O **magnecular clusters** ~~**magnecules**~~ with specific density greater than 3.

The terminology described in this invention can be defined as follows: ~~**"magnecules"**~~ **magnecular clusters** are stable clusters of individual atoms, dimers and molecules bonded together by the attraction between opposite polarities of the toroidal polarization of the orbits of peripheral atomic electrons; "specific density" is the density of a conventional gas composed by the same molecules measured in atomic mass units (a.m.u.) **per standard cubic feet (scf)**; "average specific density" is the density of a gas with magnecular structure, thus having generally different cluster constituents when measured also in a.m.u.**/scf**; the "energy content" is the heat produced by one standard cubic feet (scf) of a combustible gas when measured in British Thermal Units (BTU); an "apparatus" is, for this invention, an equipment permitting the industrial production of gases with magnecular structure; a "piping system" is a set of

interconnected pipes permitting a common flow; "electrodes" are a pair of conductors permitting an arc between a gap at their tip; "gas" is referred to a substance which is at the gaseous state when at room temperature and pressure; a "vapor" is referred to a substance which is liquid at room temperature but which acquires its gaseous phase at a sufficiently high temperature; a "gaseous hydrocarbon" is a combustible gas whose chemical composition is that of hydrocarbons, such as natural gas, methane, acetylene; a "slit", also called in this invention a "Venturi" is a restriction in the flow of a gas with a rectangular sectional area and a minimal width; all other definitions of "electric current", "pressure", "volume", etc. are standard.

On page 12, in the paragraph starting at line 23 and ending at line 35:

Another embodiment of the invention is an apparatus and method for increasing the voltage, power and efficiency of a fuel cell comprising operating a fuel cell with a processed gas which has a specific density and an energy content bigger than corresponding values of an original gas prior to being processed. The processed gas is made by recirculating the original gas in a pressure resistant piping system, by compressing said original gas to a desired pressure, and by subjecting the recirculated original gas to generated electric arcs created by at least one pair of electrodes within an interior of the piping system. The original gas is one of hydrogen and oxygen. The processed gas is MagH™ **hydrogen fuel** when hydrogen is the original gas and MagO™ **oxygen gas** when oxygen is the original gas.

On page 13, in the paragraph starting on line 14 and ending on line 19:

The processed hydrogen gas is separated with filtration means. The processed hydrogen gas may also be separated using means for cryogenically liquefaction of remaining components. The processed fuel also includes the processed hydrogen gas in the presence of carbon and oxygen, and the processed hydrogen is the **magnecular cluster form of** ~~**MagH**~~ **hydrogen fuel**.

On page 15, in the paragraph starting on line 21 and ending on line 29:

In fact, under the above conditions schematically represented in Fig. 6, atoms with the toroidal polarization of their orbitals find themselves aligned one next to the other with opposing polarities. Therefore, the latter attract each other, thus forming **the magnecular clusters** ~~magnecules~~. The flow of the gas through the electric arc then removes the **the magnecular clusters** ~~magnecules~~ immediately following their creation. The electric arc decomposes the original molecule, thus permitting the presence of isolated atoms in the magnecular structure as needed to increase the energy output.

On page 16, in the paragraph starting on line 13 and ending on line 19:

It is also evident that, after completing the processing in the apparatus of this invention, the resulting new species is not composed of all identical **magnecular clusters** ~~magnecules~~, as it is the case for molecules, but instead of a variety of **magnecular clusters** ~~magnecules~~ from a minimum to a maximum number of atomic components. The specific density of the magnecular gas is then given by the average density of all different **magnecular clusters** ~~magnecules~~.

In the paragraph starting on page 17, line 29 and ending on page 18 at line 12:

According to the above apparatus, the selected gas is continuously flown by pump 11 through Venturis 80 in the immediate longitudinal vicinity of DC electric arcs 20, 21, by therefore exposing said gas to the DC electric arc according to the main principle of this invention. Assuming that the 50 Kwh power unit has 25% loss in the AC-DC rectification, the equipment has 37.5 Kwh of DC electric power available at each arc. Since another principle of this invention is the maximization of the electric current, the arc is operated at about 37 V, thus permitting 1,000 A in each arc. These operating features can be continuously supported by tungsten electrodes. The continuous recirculation of the gas through Venturis 80 for one hour has the following implications: by exposing the atoms to the extreme magnetic fields in the immediate vicinity of the arc, thus polarizing their electron orbits into toroid; aligned polarized atoms as in Fig. 5 bond to each others; and there is the consequential formation of **magnecular clusters** ~~magnecules~~ with the resulting achievement of the desired increase of the specific density and energy content as illustrated in the experimental evidence outlined below.

In the consecutive paragraphs starting on page 18, line 28 and ending on page 19, line 10:

The difference between the embodiment of Fig. 9 and that of Fig. 7 is the following. The latter embodiment acts according to the circular configuration of the magnetic field of Fig. 6, while the former embodiment acts according to a linear configuration of the magnetic field along the symmetry axis of the solenoid with intensity $B = nI/r$, where n is the number of turns, I is the current in Amps and r is the radius of said tube 201. It is evident that the linear alignment of magnetically polarized atoms along the direction of its flow favors the creation of ~~**into magnecules**~~ **magnecular clusters** as compared to the circular alignment of Fig. 6, particularly when the equipment is operated, for instance, at pulses of 50,000 A with a radius of tube 201 of 10^{-5} mm.

However, the selection of the preferred equipment depends on the specific needs. For instance, the embodiment of Fig. 9 cannot breakdown the original molecules, thus forming **the magnecular clusters** ~~**magnecules**~~ essentially composed of molecules with individual polarized atoms. By comparison, the electric arc of the apparatus depicted in Fig. 7 does indeed separate conventional molecules, thus forming **magnecular clusters,** ~~**magnecules**~~ which generally contains atoms, dimers and molecules.

On page 19, in the consecutive paragraphs starting at line 18 and ending at line 32:

The use of the MagH™ **hydrogen fuel** and MagO™ **oxygen** produced by the above embodiments is evidently multifold and include as representative examples without limitations: use of ~~**MagH and MagO**~~ **the magnecular clusters of hydrogen fuel and oxygen** in fuel cells; use of ~~**MagH**~~ **the magnecular clusters of hydrogen fuel** as fuel for internal combustion engines; use of ~~**MagH**~~ **the magnecular clusters of hydrogen fuel** as fuel for electric generators; use of ~~**MagH and MagO**~~ **the magnecular clusters of hydrogen fuel and oxygen** in their liquefied form as fuels for rockets.

In all cases the advantages in the use of ~~**MagH and MagO**~~ **the magnecular clusters of hydrogen fuel and oxygen** over the use of conventional gases are numerous. For instance, the use of ~~**MagH and MagO**~~ **the magnecular clusters of hydrogen fuel and oxygen** as liquefied rocket fuel implies: 1) a reduced cost of liquefaction, evidently due to the increases density and other factors; 2) an increased energy output; and 3) an increase of the payload or, equivalently, a decrease of the fuel for the same payload. All these advantages evidently depend on the achieved degrees of magnecular structure.

On page 21, in the consecutive paragraphs starting at line 1 and ending at line 19:

As an example, underwater electric arcs produce a combustible gas which, as far as the atomic percentage is concerned, is composed of 50% H, 25% O and 25 % C. These atoms are then combined into ~~**magnecules**~~ **magnecular clusters** generally composed of H, C and O individual atoms, HO, CH and C-O dimers with one single valence bond, and ordinary molecules of H_2, CO, H_2O and O_2. Since hydrogen is the biggest component of the combustible gas, it can be effectively filtered with various means, resulting in **magnecular clusters of hydrogen** ~~MagH~~. In fact, experimental evidence has establishes that ~~**magnecules**~~ **magnecular clusters** survive filtering.

Numerous micrometric filtering systems 310 are currently available. As an indication without un-necessary limitations, a filtering system recommendable for the separation of in **magnecular clusters of hydrogen** ~~MagH~~ is given by a 5 Armstrong zeolite consisting of a microporous molecular sieve, which essentially selects a gas via "molecular sieving," or molecular size exclusion. After a number of hours of operation depending on the DC power unit, the operating pressure and the size of the zeolite filter, the latter is replaced as part of routine service.

In the five consecutive paragraphs starting on page 21, line 29 and ending on page 23, line 29:

To illustrate the operation of the alternative embodiment of Fig. 11, suppose that liquid 304 is ordinary water. In this case, as indicated earlier, the combustible gas has a magnecular structure composed by H, C and O. By recalling that hydrogen liquefied very close to absolute zero degrees temperature, its separation from the combustible gas can be achieved by cooling the gas to about minus 70 degrees F, at which CO is liquefied. Said cooling can be achieved via the use of liquid nitrogen for coolant 318 or other liquid having the needed low temperature or any of the several, commercially available cryogenic equipment not shown in the figure because they are well known to skilled in the art. In this way, the liquefied component of the combustible gas exists at outlet 316, while **magnecular clusters of hydrogen fuel** ~~MagH~~ exits at outlet 315. Valves 317 and 314 are used to optimize operations.

It is evident that the equipment of Figs. 10 and 11 produce a form of **magnecular clusters of hydrogen fuel** ~~MagH~~ and other ~~magnegases~~ **clusters of gases** less pure as compared to those produced via the equipment of Figs. 7, 8, 9, evidently because of impurities containing C and O atoms which should be expected in the production via the equipment of Figs. 10 and 11 but not with those of Figs. 7, 8, 9. Therefore, the selection of the equipment depends, again, on the selected application. In fact, for automotive uses of **magnecular clusters of hydrogen fuel** ~~MagH~~ as fuel for internal combustion engines the presence of C and O atoms is definitely desirable because such presence increases the energy content while decreasing the need of atmospheric oxygen. Therefore, the **hydrogen fuel** ~~MagH~~ produced via the filtration or cryogenic cooling of ~~magnegases~~ **the clusters of gases** per the equipment of Figs. 10 and 11 is definitely preferable for use as fuel for internal combustion engine as compared to the forms of **hydrogen fuel** ~~MagH~~ produced via the equipment of Figs. 7, 8, and 9. On the contrary, the latter methods are preferable over the preceding ones for use of **the process hydrogen fuel and oxygen** ~~MagH and MagO~~ in fuel cells since the purity of the final form of **the process hydrogen fuel and oxygen** ~~MagH and MagO~~ is guaranteed by that of the original gas.

It is now important to review the experimental evidence on the main results of this invention. First, the inventor constructed an apparatus as per Fig. 7 by using for arcs the sparks produced by four automotive spark plugs placed in series on piping system 5, said spark plugs

being operated by a conventional coil by automotive battery with 12 V, 800 A. The equipment was operated at 15 psi. Two samples of oxygen which were produced, and denoted ~~MagO1~~ **processed oxygen 1** and **processed oxygen 2** ~~MagO2~~, by passing them through said array of four sparks for 30 minutes.

~~Said two samples of MagO1 and MagO2~~ **The two samples** were tested in lieu of ordinary oxygen in a 2-cell Proton Exchange Membrane (PEM) fuel cell with dimensions 7 x 11 x 11 cm, which cell was operated with conventional high purity hydrogen. The membrane material was Nafion 112; the catalyst in the electrodes was platinum acting on carbon; the plates for heat transfer were given by two nickel/gold plated plates; the temperature of the fuel cell was kept constant via ordinary cooling means; current was measured via a HP 6050AA electronic load with a 600 W load module; a flow rate for oxygen and hydrogen was assigned for each current measurement; both oxygen and hydrogen were humidified before entering the cell; the measurements reported herein were conducted at 30 degrees C.

The results of the measurements are summarized in Figs. 12. 13 and 14 which report relative measurements compared to the same conditions of the cell when working with ordinary pure oxygen. As one can see, these measurements show a clear increase of the voltage, power and efficiency of the maximal order of 5% when the cell was operated with **the processed oxygen** ~~MagO~~. To appraise these results, one should note that the samples **of the processed oxygen** ~~MagO~~ used in the test were reached via an equipment operated with an ordinary automotive battery, powering intermitted sparks as typically the case in automotive engines, and with the pressure limited to 15 psi. By comparison, the **processed oxygen** ~~MagO~~ of this invention should be produced by an array of arcs each operated by 50 Kwh power unit, with continuous discharges at 1,000 A, the apparatus being operated at 4,500 psi. It is evident that the transition from the conditions of the test to those of this invention imply a significant increase of the performance of the fuel cells when operated with **the processed oxygen** ~~MagO~~. Moreover, bigger increases in voltage, power and efficiency are expected when a fuel cell is operated with both **the processed oxygen** ~~MagO~~ and **the processed hydrogen** ~~MagH~~.

In the four consecutive paragraphs starting on page 24, line 1 and ending on page 25 at line 13:

Additional tests were conducted with **the processed hydrogen** ~~MagH~~ produced with the equipment of Figs. 10 and 11. A clean burning combustible gas was first produced by using ordinary tap water as liquid feedstock. The combustible gas then passed through a 5 Armstrong zeolite filter as described above. The filtered gas~~, here called MagH,~~ was then subjected to the following three measurements:

1) The average specific density of this type of **the processed hydrogen** ~~MagH~~ was measured by two independent laboratories which issued written statements that this particular form of ~~Mag-H~~ **processed hydrogen** has the average specific density of 15.06 a.m.u., while conventional pure hydrogen has the specific density of 2.016, thus implying a 7.47 fold increase of the specific density of conventional hydrogen.

2) This type of **processed hydrogen** ~~MagH~~ was then subjected to analytic measurements by a qualified laboratory via Gas Chromatography (CG) and Fourier transform infrared spectroscopy (FTIR). All measurements were normalized, air contamination was removed, and the lower detection limits were 0.01%. The results are reported in Fig. 15. As one can see, these measurements indicate that this particular type of **processed hydrogen** ~~MagH~~ was composed of 99.2% hydrogen and 0.78% methane, while no carbon monoxide was detected.

3) The same type of **processed hydrogen** ~~MagH~~ used in the preceding tests was submitted to Gas Chromatographic Mass Spectrometric (CG-MS) tests via the use of a HP GC 5890 and a HP MS 5972 with operating conditions specifically set for the detection of magnecules, which are different than those for molecules, such as: a feeding line with the biggest possible section of 0.5 mm diameter was selected (to prevent that large magneclusters are not permitted to enter the instrument because of the use of a micrometric feeding line); the feeding line was cryogenic cooled; the operation of the columns at the lowest admitted temperature of 10 degrees C (to prevent that the column temperature would disintegrate the **magnecular clusters** ~~magnecules~~); the longest possible ramp time of 26 minutes was selected (to permit the separation of the peaks representing **magnecular clusters** ~~magnecules~~); and other requirements. The results of this third test are reproduced in Fig. 16. As one can see, by keeping in mind the results of GC-FTIR of FIG> 15, the GC-MS measurements should have shown only two peaks,

that for hydrogen and that for methane. On the contrary, these GC-MS tests do confirm indeed the existence of a large peak at about 2 a.m.u. evidently representing hydrogen, but also the presence of a considerable number of additional peaks in macroscopic percentages all the way to 18 a.m.u. It is evident that these latter peaks establish the existence of a magnecular structure in the **type of magnecular clusters of hydrogen** ~~taupe of MagH~~ here studied. Note, in particular, the existence of well identified peaks in macroscopic percentage with atomic weight of 3, 4, 5, 6, 7, 8 and higher value which, for the gas under consideration here, can only be explained as **magnecular clusters** ~~magnecules~~ composed of individual H atoms as well as H molecules in increasing numbers.